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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,205

09/18/2006

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EXAMINER

ROSENAU, DEREK JOHN

ART UNIT

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2834

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/593,205	Applicant(s) HATTORI ET AL.	
	Examiner Derek J. Rosenau	Art Unit 2834	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>9/18/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities: it appears that “and a conductive material other than said conductive powder” is intended to be “and a conductive material other than said conductive polymer”. The conductive material is part of the conductive powder, and therefore can not be made of a material other than the conductive powder. Appropriate correction is required.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 4-6, and 9-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Ishibashi et al. (US 7064473).

4. With respect to claim 1, Ishibashi et al. discloses a polymer actuator (Fig 1A, item 1) comprising a conductive powder compact (items 5 and 6), an ion donor (item 3), a work electrode (Figs 6A and 6B, item 52), and a counter electrode (item 2), wherein said powder compact comprises conductive powder containing a conductive polymer (item 5) and a conductive material (item 6) other than said conductive polymer whereby

said actuator contracts or extends by voltage applied between said work electrode and said counter electrode (column 5, lines 30-38).

5. With respect to claim 2, Ishibashi et al. discloses the polymer actuator according to claim 1, wherein said conductive polymer has a conjugated structure (Fig 1A and column 5, lines 47-49).

6. With respect to claim 4, Ishibashi et al. discloses the polymer actuator according to claim 1, wherein said conductive material is in a powdery, net and/or porous form (column 5, lines 47-49).

7. With respect to claim 5, Ishibashi et al. discloses the polymer actuator according to claim 1, wherein said conductive material is at least one selected from the group consisting of platinum, gold, palladium, nickel and carbon (column 7, lines 15-18).

8. With respect to claim 6, Ishibashi et al. discloses the polymer actuator according to claim 1, wherein said ion donor is in the form of a solution, a sol, a gel or combinations thereof (column 5, lines 39-43).

9. With respect to claim 9, Ishibashi et al. discloses the polymer actuator according to claim 1, wherein said work electrode is in contact with said powder compact (Figs 6a and 6B), said counter electrode is disposed in said ion donor at a position separate from said powder compact (Fig 1A).

10. With respect to claim 10, Ishibashi et al. discloses the polymer actuator according to claim 1, having pluralities of said powder compacts and pluralities of said work electrodes alternately arranged in tandem (Figs 6A and 6B).

11. With respect to claim 11, Ishibashi et al. discloses the polymer actuator according to claim 1, wherein the ratio of said conductive material to said powder compact is 1 to 99% by mass (column 5, lines 58-61).

12. With respect to claim 12, Ishibashi et al. discloses the polymer actuator according to claim 1, wherein the electric resistance of said conductive powder is 10^{-4} ohms to 10^6 ohms (column 7, lines 37-41). The examples provided at column 12, lines 10-39 provide actuator lengths of approximately 10 cm. The electrical conductivity is provided as .1 S/cm. This would result in a total conductance of 1 S for the length of the actuator. Electrical resistance and conductance are inverses of each other; therefore, the electrical resistance would be the inverse of 1 S, which is 1 ohm.

13. With respect to claim 13, Ishibashi et al. discloses the polymer actuator according to claim 1, wherein said conductive powder has an average particle size of 10 nm to 1 mm (column 7, lines 31-36).

14. With respect to claim 14, Ishibashi et al. discloses the polymer actuator according to claim 1, wherein said powder compact has an electrical conductivity of 10^{-3} to 10^5 S/cm (column 7, lines 37-41).

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. Claims 3 and 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al. in view of Smela et al. (US 20060169954).

17. With respect to claims 3 and 15, Ishibashi et al. discloses the polymer actuator according to claims 1 and 2, respectively.

Ishibashi does not disclose expressly that said conductive polymer is at least one selected form the group consisting of polypyrrole, polythiophene, polyaniline, polyacetylene and their derivatives.

Smela et al. teaches a polymer actuator in which the conductive polymer is at least one selected form the group consisting of polypyrrole, polythiophene, polyaniline, polyacetylene and their derivatives (Paragraph 17).

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the polymer actuator materials of Smela et al. with the polymer actuator of Ishibashi et al. as these materials are well known in the art for their use as polymer actuators (Paragraph 17).

18. Claims 7 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishibashi et al. in view of Okura et al. (US 6860982).

19. With respect to claim 7, Ishibashi et al. discloses the polymer actuator according to claim 1.

Ishibashi et al. does not disclose expressly that said ion donor contains an amphiphatic compound.

Okura et al. teaches a polymer actuator in which an ion donor (item 55) contains an amphiphatic compound (column 4, lines 61-65). Polyethylene glycol is an amphiphatic compound.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the amphiphatic compound of Okura with the polymer actuator of Ishibashi et al. as it is well known for its use as an ion donor in polymer actuators (column 4, line 61-65).

20. With respect to claim 8, Ishibashi et al. discloses the polymer actuator according to claim 1.

Ishibashi et al. does not disclose expressly that said ion donor has a binder function.

Okura et al. teaches a polymer actuator in which the ion donor (item 55) has a binder function. One of the materials disclosed as the ion donor of Okura et al. is polyethylene glycol (column 4, lines 61-65), which is a material that functions as a binder.

At the time of invention, it would have been obvious to a person of ordinary skill in the art to combine the amphiphatic compound of Okura with the polymer actuator of Ishibashi et al. as it is well known for its use as an ion donor in polymer actuators (column 4, line 61-65).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Derek J. Rosenau whose telephone number is

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(571)272-8932. The examiner can normally be reached on Monday thru Thursday 7:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Derek J Rosenau
Examiner
Art Unit 2834

/D. J. R./
Examiner, Art Unit 2834

/Darren Schuberg/
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